

SHARP from a mentor's perspective

By Albert Rodriguez

NASA Technical Monitor
Biomedical Hardware Development and Engineering Office

Current predictions by the National Science and Technology Council estimate there may be a shortage of engineers and scientists in the U.S. by the 21st century. There is a great source of untapped talent in underrepresented minorities. Oftentimes underrepresented students do not have opportunities in science and engineering for various reasons such as a lack of financial resources and shortage of mentors. The SHARP program pairs motivated talented students with NASA professionals to give them the opportunity to experience what they are capable of achieving and to encourage them to continue on their path. Working with my SHARP student, Jose Rivera, has been a great experience. He has had the opportunity to experience NASA and what engineers and scientists do, while at the same time making a contribution to the space program. I know there were teachers and mentors who made an impact in my life, and it is very rewarding to do the same for others. ■

Danika Chevalier, Wendell Smith, Kent Morris and Joe Kosmo examine spacesuit items and other space tools and equipment.



NASA... Here We Come?

By Adrienne Ashford

When I learned that I was one of the five students selected from the Texas Academy of Mathematics and Science (TAMS) to work at the Johnson Space Center this summer, I didn't know what to expect. My emotions were torn between surprise, excitement, and fear. No, actually it went beyond fear to terror. Not only would I break every piece of equipment in the lab, I just knew I would manage to ruin millions of dollars worth of experiments. What had I gotten myself into? While everyone at school congratulated me, I secretly wondered if I should back out. This is the first year that TAMS

students have had the opportunity to work at JSC, and I just knew that after they took one look at me, it would also be the last. The first day we went through badging at the front gate and had an orientation session. Shortly after that I met my mentor, Dr. Alan Feiveson. That gave me some sense of ease. I had made it to the right place at the right time. Hooray! Now I only had to make it through the next eight weeks and I would be fine (maybe). Dr. Feiveson had his work cut out for him. He is a statistician in the Medical Sciences Division. The highest math class I have had is Calculus 1. I knew no statistics, no Stata (the computer program), and no programming. Everything was over my



Texas Academy of Math and Science students Michael Priolo, Adrienne Ashford, and Eric Kuban spent part of their summer at JSC.

head, but Dr. Feiveson took me under his wing and made sure that I learned everything that I needed. He started out by teaching me the basics of statistics. When I wasn't taking notes, I was asking questions. Dr. Feiveson was excellent at answering my questions no matter how small and insignificant they were.

Now I look back on those first few days and realize that they weren't as bad as I thought. I have learned enough statistics and programming to make a few simple programs. It was such a thrill when I finally made a program that worked! Now I am working on a countermeasure simulation project. The test subjects stay in bed for 18 weeks to simulate the bone loss that occurs when astronauts go into space. Using random data, I am simulating the results of the experiment. The project has forced me to put all of my knowledge together to come up with a final product. Now that I am near the end of the project, I can definitely say that coming to NASA was not a mistake! I love it here! ■

By Jo Anna Castilleja

It all began as I checked the answering machine for any new messages. I glanced over my shoulder and saw two distinct figures and a red dot. Without paying much attention to the distraction, I continued listening to the messages, until I heard a voice calling me back that definitely caught me off guard. I was speechless; that voice made me realize that I was accepted into the Summer High School Apprenticeship Research Program at the NASA Johnson Space Center. I jumped for joy, not realizing that my parents were capturing every minute of my excitement. To think that NASA would allow a high school student to participate as a summer intern was definitely exciting.

When I arrived on the first day, I was anxious to meet my mentor and begin my project. I wondered how I would fit into the NASA program and if the skills I had were good enough. Finally, after the initial processing was done, I met my mentor, Leroy Villarreal, a computer engineer, along with his co-op student, Justin Turner. I wondered if as an engineer, my mentor would have a strict and uncaring schedule. I was surprised to meet a friendly, relaxed and understanding individual. I was assigned to the Systems and Applications branch of the Information Systems Directorate and was introduced to its members. The task that I was to perform was something I had not done before. I was to build my own computer from scratch. I had no idea how because I was only

familiar with computer software, not hardware. I quickly learned how each piece fit into the puzzle and, within a couple of days, I had a personal computer up and running. There was still more to learn, such as upgrading government computers and repairing a personal computer without knowing what the initial problem is. This assignment gave me a different perspective of computers. It was indeed fascinating to see exactly how it works and how all the pieces come together to produce an efficient system customized to the users' needs. In addition to the NASA work experience, there were SHARP enrichment activities that were definitely a dream come true. Our SHARP coordinator, Marissa Carrillo, put together a variety of tours that gave us, the students, the chance to peer into

a whole new world at JSC – a world designed to explore the outer limits of our planet and beyond. I was in awe as I walked through the halls of the auditorium where the dignitaries of the world spoke and where NASA displays its accomplishments throughout the years. I have always looked at NASA with fascination and admiration, and now more so after encountering its many wonders such as the Neutral Buoyancy Lab, the spacesuit lab, Mission Control, and the TransHab mockup (the living area designed for the International Space Station), and Ellington Field. Words cannot express the gratitude I have toward student programs like SHARP that teach and guide future scientists and engineers to a once-in-a-lifetime experience. ■

Texas Academy of Math and Science students spend summer at JSC

By Adrienne Ashford
and Eric Kuban



The Texas Academy of Math and Science is a unique two-year residential college-accelerated school for students gifted in mathematics and science. During the two-year experience at the Academy, students complete their last two years of high school and the first two years of college concurrently. Academy students live in a residential hall at the University of North Texas, in Denton. After two years at TAMS, students graduate with a high school diploma and 60-80 hours of college credit. Each summer, Academy students apply for summer internships and research opportunities with various organizations. Selected students receive a scholarship to cover expenses and earn six hours of college credit. This summer five TAMS students, Adrienne Ashford, Chris Ezell, Eric Kuban, Stuart McGregor, and Michael Priolo, spent June and July at the Johnson Space Center. Each completed a research project with guidance from a mentor, which is similar to the Summer High School Apprenticeship Research Program. ■

For more information about TAMS, visit Web site <http://www.tams.unt.edu>

Students examine an aircraft at Ellington Field.